

**We Claim:**

1. A blood separation assembly comprising  
a frame rotatable about a rotational axis, the  
frame having walls that define an open interior space  
5 through which the rotational axis passes,  
a drive mechanism coupled to the frame to rotate  
the frame about the rotational axis,  
a rotor carried by the frame within the open  
interior space for relative rotation about the rotational  
10 axis,  
a blood processing chamber secured to the rotor  
comprising a base including formed walls that define a  
separation channel, the blood processing chamber being  
rotatable with the rotor about the rotational axis,  
15 an umbilicus having a far end region coupled at  
a non-rotating junction to the blood processing chamber  
along the rotational axis, the umbilicus also including a  
near end region opposite to the far end region and a mid  
region between the far and near end regions,  
20 a mount aligned with the rotational axis outside  
the frame for holding the near end region of the umbilicus  
in a non-rotating and stationary position opposite to the  
far end region, the mid region of the umbilicus being bowed  
outside the rotational axis between the near and far end  
25 regions,  
a first umbilicus support surface on the frame  
that engages the mid region of the umbilicus, and  
a second umbilicus support surface on the frame  
30 spaced from the first umbilicus support surface in a  
direction toward the mount, the second umbilicus support  
surface engaging the umbilicus and guiding the near end  
region of the umbilicus toward the mount, the first and  
second umbilicus support surfaces imparting rotation to the

09976830-101301

mid portion of the umbilicus in response to rotation of the frame about the rotational axis, rotation of the umbilicus imparting rotation to the blood processing chamber secured to the rotor, the first and second umbilicus support surfaces inhibiting travel of the umbilicus in radial directions toward and away from the rotational axis.

2. An assembly according to claim 1

3. An assembly according to claim 2

4. An assembly according to claim 2

5. An assembly according to claim 1

6. An assembly according to claim 5

7. An assembly according to claim 5

8. An assembly according to claim 1

9. An assembly according to claim 1

10. An assembly according to claim 1

wherein the near end region carries a sheath.

11. An assembly according to claim 1

wherein the far end region carries a mount coupled to the blood processing chamber at the non-rotating junction.

12. An assembly according to claim 1

wherein the umbilicus comprises an interior comprising a first material and an exterior comprising a second material different than the first material, and

5 wherein the near end region carries a sheath fabricated from a material that is compatible with the second material.

13. An assembly according to claim 1

wherein the umbilicus comprises an interior comprising a first material and an exterior comprising a second material different than the first material, and

5 wherein the far end region carries a mount fabricated from a material that is compatible with the second material, the mount being coupled to the blood processing chamber at the non-rotating junction.

13. An assembly according to claim 1

wherein the blood processing chamber comprises a molded base assembly defining a hub about which the separation channel circumferentially extends, and at least  
5 one radial passage that directs fluid between the hub and the separation channel, the hub being further formed to define the non-rotating junction with the fear end of the umbilicus to convey blood to and from the separation channel through the hub.

14. An assembly according to claim 1

wherein the rotor includes a latching assembly to enable removable engagement of the blood processing chamber to the rotor.

15. A blood processing system comprising

00976830-101301  
THE TOP SECRET

5 a blood processing assembly including a  
centrifugal blood processing chamber, an umbilicus having a  
far end region coupled in a non-rotating junction to the  
blood processing chamber along the rotational axis, the  
umbilicus further including a near end region opposite to  
the far end region, and a mid region between the far and  
near end regions, a blood collection tube extending from the  
near end of the umbilicus, a fixture coupled to the near end  
10 of the umbilicus to hold the blood collection tube in a  
desired orientation, and

a blood processing device comprising  
an optical sensing assembly,  
a centrifugal separation station  
15 comprising a yoke rotatable about a rotational axis, the  
yoke having walls that define an open interior space through  
which the rotational axis passes, a drive mechanism coupled  
to the yoke to rotate the yoke about the rotational axis, a  
rotor carried by the frame within the open interior space  
20 for relative rotation about the rotational axis, the rotor  
including a latching assembly to releasably engage the  
centrifugal blood processing chamber for rotation with the  
rotor,

a pocket formed adjacent the blood  
25 separation station outside the yoke defining a mount aligned  
with the rotational axis for releasably holding the near end  
region of the umbilicus in a non-rotating and stationary  
position at a location opposite to the far end region, the  
mid region of the umbilicus being bowed outside the  
30 rotational axis between the near and far end regions, the  
pocket also including a holder to releasably receive the  
fixture when the near end region of the umbilicus is loaded  
into the mount, the holder locating the component collection  
tube in association with an optical sensing assembly mounted  
35 on the frame, and

00976830 101304

40

5

17. An assembly according to claim 15

18. An assembly according to claim 17

19. An assembly according to claim 17

wherein the low friction material includes ultra high molecular weight polyethylene.